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Claims

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1. Device (1) for monitoring a technical facility (2)  
comprising multiple systems, in particular a power plant  
5 facility, characterized by
  - at least one analysis module (13, 13a, 13b), which  
includes a dynamic model (15) of at least one system (3,  
5, 7, 9, 11) of the technical facility (2), whereby  
operational (17, 17a, 17b) and/or structural data (19,  
10 19a, 19b) from the technical facility (1) can be conveyed  
to the analysis module (13, 13a, 13b) as input data, and
    - at least one algorithm (21, 21a, 21b) based on artificial  
intelligence included in the analysis module (13, 13a,  
13b), by means of which the dynamic model (15) of the  
15 system (3, 5, 7, 9, 11) can be improved during the  
operation of the system,  
whereby output data (23, 23a, 23b) is identifiable by means  
of the analysis module (13, 13a, 13b) and characterizes the  
current and/or future operational behavior of the system (3,  
20 5, 7, 9, 11).
2. Device (1) according to Claim 1, characterized in that the  
improvement of the dynamic model (15) includes the  
identification of that input data that has not yet been  
25 previously used by the dynamic model (15), and in that the  
dynamic model (15) can be expanded with the help of this  
input data.
3. Device (1) according to Claim 1 or 2, in which the dynamic  
30 model (15) includes one or more elements from the group  
{characteristic, physical equation, neural network, fuzzy  
logic, genetic algorithm}.

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4. Device (1) according to one of the Claims 1 to 3, whereby the dynamic model (15) includes at least one neural network, which can be trained using historical operational data from the system (3, 5, 7, 9, 11).

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5. Device (1) according to one of the Claims 1 to 4, characterized in that a number of analysis modules (13, 13a, 13b) are available, which include in each case a dynamic model (15) of at least one system (3, 5, 7, 9, 11) of the technical facility (2), and in that at least one additional algorithm (25) based on artificial intelligence is provided, by means of which correlations at least between the input and/or output data of a first of the analysis modules (13, 13a, 13b) and the input and/or output data of a second of the analysis modules (13, 13a, 13b) are identifiable.

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6. Device (1) according to Claim 5, characterized in that additional output data (27) is identifiable by means of the correlations, said data characterizing the current and/or future operational behavior of the technical facility (1), whereby this additional output data (27) includes cross-system information.

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7. Device (1) according to one of the Claims 1 to 6, whereby the operational data (17, 17a, 17b) and/or structural data (19, 19a, 19b) of the technical facility (2) includes one or more items of information from the group {process data, operational messages, warning messages, disruption messages, monitoring notifications, comments, design of the technical facility, hierarchy of the facility components}.

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8. Device (1) according to one of the claims 1 to 7, whereby the operational data (17, 17a, 17b) and/or structural data (19, 19a, 19b) of the technical facility (2) includes

current and/or historical data from the technical facility (2).

9. Device (1) according to one of the Claims 1 to 8, whereby the operational data (17, 17a, 17b) and/or structural data (19, 19a, 19b) from the technical facility (2) is provided by a process control system of the technical facility (2).

10. Method for monitoring a technical facility (2) comprising multiple systems, in particular a power plant facility, characterized by the following steps:

- Operational data (17, 17a, 17b) and/or structural data (19, 19a, 19b) from the technical facility (2) is conveyed to a dynamic model at least of one system (3, 5, 7, 9, 11) of the technical facility (2) as input data,
- the dynamic model (15) of the system (3, 5, 7, 9, 11) is improved during the operation of the system (3, 5, 7, 9, 11) by means of an algorithm (21, 21a, 21b) based on artificial intelligence, and
- by means of the dynamic model (15), output data (27) is identified which characterizes the current and/or future operational behavior of the system (3, 5, 7, 9, 11).

11. Method according to Claim 10, characterized in that the improvement of the dynamic model (15) includes the identification of that input data which has not yet been previously used by the dynamic model (15), and in that the dynamic model (15) can be expanded with the help of this input data.

12. Method according to one of the Claims 10 or 11, characterized in that a number of dynamic models (15) are provided, which in each case describe at least one system (3, 5, 7, 9, 11) of the technical facility, and that at

least one additional algorithm (21, 21a, 21b) based on artificial intelligence is provided, by means of which correlations at least between the input and/or output data of a first of the dynamic models (15) and the input and/or output data of a second of the dynamic models (15) are identifiable.

13. Method according to Claim 12, characterized in that additional output data is identifiable by means of the correlations, said data characterizing the current and/or future operational behavior of the technical facility (2), whereby this additional output data includes cross-system information.